

# **CADD GUIDELINES**



**2002**

**ENGINEERING DIVISION**

# **FCDMC CONSULTANT CADD GUIDELINES**

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## **SECTION 1: INTRODUCTION**

These guidelines are to be followed in preparation of drawings. Except as modified herein, drawing layout, format and lettering sizes will be presented as required in the current FCDMC Drafting Guide, 2002.

These guidelines are written for MicroStation/J Version 7.01. An attachment is provided for the consultant, which can be downloaded from the District's website [www.FCD.Maricopa.gov](http://www.FCD.Maricopa.gov) as an example of the guides.

## SECTION 2: GENERAL

### 2.1 Abbreviations

Abbreviations should not be used where the meaning may be in doubt. Standard abbreviations can be found in section 101 of the MAG Standard Specification. Whenever an abbreviation is used that is not found in section 101 of the MAG Standard Specification, it should be listed and defined on the General Notes Sheet.

### 2.2 Omission of Periods

Periods shall be omitted after abbreviations. For example, 60 cfs rather than 60 c.f.s.

### 2.3 Working Units

Subunits per Master Unit	10
Positional Units per Subunit	100
Working Area	4,294,967 MU Squared

### 2.4 Global Origin

Global origin should be set so that all of Maricopa County is in the design plane using State Plane Coordinates. The District uses the global origin below:

X=2,147,483.5

Y=2,147,483.5

Z=2,147,483.5

## **SECTION 3: SUBMITTING CONTRACT PLANS**

### **3.1 Overview**

This section covers what is required of the Consultant for submitting contract plans to the District. There are, generally, two deliverables required for submitting contract plans to the District, hard copy plans and electronic plans. The Consultant should refer to the project scope of work for specific submittal or deliverable requirements.

### **3.2 Hard Copy Plans Submittal**

- 1) All full size contract drawings should be submitted on 24-inch by 36-inch 4 mil mylar and half size drawings should be 11-inch by 17-inch.
- 2) The final (100%) submittal shall be plotted at a minimum of 400 dots per square inch (DPI). The final plot shall be plotted or photo reproduced without sticky backs. If plans have been hand drafted, the final (100%) submittal shall be radiographed-inked drawings. If sticky backs have been used, photo reproducible mylars shall be submitted, with original seal and signature on the photo mylars. All seals and signatures shall be in smudge-proof ink.
- 3) Contract drawings should be bordered and titled in accordance with the guidelines. Standard border sheets can be downloaded from the District's internet site [WWW.FCD.Maricopa.gov](http://WWW.FCD.Maricopa.gov). All drawings are to be prepared in accordance with the guidelines described herein or as otherwise directed, and are to be signed and sealed by a professional engineer of the appropriate discipline, registered in the State of Arizona. Initials of the drafter, designer and checker must be included as appropriate in the title block.
- 4) The District's sample plans are offered with the intention that they shall be used as a guide, and are not a substitute for design criteria, technical assistance, or sound engineering judgment. The Consultant shall submit sample plans for approval prior to commencing work. Plans not capable of producing high quality prints by the District in reduced form shall be considered unacceptable and shall be redrawn by the Consultant at no additional cost to the District.
- 5) The District uses a "Xerox" process for final reproduction of drawings for bid set. The Consultant shall not draw on the backside of drawings, or use any form of shading techniques that will not reproduce clearly using this form of reproduction.

### **3.3 Electronic Plans Submittal**

- 1) Electronic Format:  
Two electronic formats are required at the completion of all jobs:
  - a) Self-contained Sheet files – The Consultant shall submit a separate design file (\*.dgn) for each sheet in a set of plans. All relevant graphics from external (reference) files must be copied into the master design file and then referenced files detached. The file name shall correspond to the sheet number in the construction drawing set that the design file represents.

- b) Un-partitioned – There shall be 3 un-partitioned files submitted. The three files shall include 1) all existing items, 2) new design elements created and 3) all property and legal boundary items. These electronic files shall be un-scaled and in state plane NAD 83, unless otherwise approved in writing by FCDMC.
- 2) Drawings shall be prepared using MicroStation/J, Version 7.01 or older per District standards or translated into MicroStation/J, Version 7.01 for submittal.
- 3) A text file shall be submitted with the electronic files. The text file should include the name and number of all fonts used by the Consultant in the project.

## **SECTION 4: CONTRACT DRAWING/PLANS CONTENT**

### **4.1 Overview**

This section covers requirements and suggestions for the content in contract drawings and sheet requirements in a set of plans. The Consultant should refer to the Project Scope of Work for specific requirements.

### **4.2 Sheet Borders**

The Consultant shall use standard District sheet border's available for downloading on the District's internet site [WWW.FCD.Maricopa.gov](http://WWW.FCD.Maricopa.gov). See the attachment for specific elements of the sheet borders.

### **4.3 Drawing Scales**

- 1) The Consultant shall select a Standard English Engineering scale for contract drawings. The scale selected is subject to the District's approval. Below are typical scales used by the District:
  - Construction Drawings:
    - c) 1"=40' Horizontally and 1"=4' Vertically in rural areas. 1"=2' Vertically may be needed depending on relief.
    - d) Plans for construction in urban areas are usually 1"=20' Horizontally and 1"=2' Vertically.
    - e) The consultant shall use a larger scale if necessary to obtain good clarity in the plans and reduced prints.
  - Conceptual Plans:
    - a) 1"=100' Horizontally and 1"=5' Vertically in rural areas.
    - b) 1"=50' Horizontally and 1"=5' Vertically in urban areas are typically used by FCDMC.
    - c) The consultant shall use a larger scale if necessary to obtain good clarity in the plans and reduced prints.
- 2) It is preferred that the Consultant use standard plan and profile sheets to show design elements of the project. If the profile has extreme differences in elevation, or if the plan requires more space than provided, two separate sheets shall be used. The plan view on a standard plan sheet and the profile on a full grid sheet using a broken vertical scale if necessary. An alternate scale may be used if the existing data and proposed work can be presented accurately and legibly. When selecting a scale, consideration must be given to the drawings being reduced to half scale for construction documents.

### **4.4 Stationing**

Stationing will always increase from left to right on the drawings. Additionally, the graphics should be orientated such that the north arrow points to the top or right of a sheet. In those cases when the direction of the stationing and north arrow direction conflict, the orientation of the station will govern. The stationing of secondary design elements shall comply with the orientation of the project centerline stationing.

### **4.5 Project Control Numbers**

The District's Project Control Number (PCN) shall be included in the appropriate place in the title block on all sheets.



#### 4.6 **Drawing Categories Overview**

The purpose of drawing categories and series is to allow establishing drawing numbers for cross-referencing of drawings while allowing sheet numbers to be more easily added prior to submittal. All contract drawings will be numbered and sequenced in accordance with the following categories. Table 4.1, below, shows the appropriate letter designation for all drawing categories and the order the sheets should follow in a set of plans. All drawing categories are not required in a set of plans. The letter designation and number should appear in the appropriate place of the sheet's title block. In "the attachment" provided with these guidelines there is a quick reference outline showing order sheets should appear in a set of plans and examples of drawing content for most categories.

**Table 4.1: Drawing Category Letter Designation**

<b><u>Designation</u></b>	<b><u>Category</u></b>
G	General
QS	Quantity Summary
PS	Pipe Summary
D	Details
C	Civil/Construction
SD	Storm Drain
CP	Connector Pipe
W	Water
S	Sewer
ST	Structure
B	Bridge
LS	Landscaping
IR	Irrigation
SB	Soil Borings
XS	Cross-sections

#### 4.7 **General Category Drawings (G)**

This category consists of the drawings that give general information, geometry data and typical sections for a project. The sheets in this category are described below.

- 1) Cover Sheet:  
Electronic cover sheets are provided by the District for the Consultant to download. A location map is to be centered on the sheet by the Consultant with provision in the lower right corner for Department approval signatures.
- 2) General Note Sheet:  
The General Note Sheet will be prepared in accordance with the sample format illustrated in "the Attachment". The sample format is available for downloading on the District's internet site. The General Note Sheet will immediately follow the Cover Sheet and include the Index of Drawings.
- 3) Legend Sheet:  
The Legend Sheet shall be prepared in accordance with the sample format illustrated in the "the Attachment". The sample format is available for downloading on the District's internet site. The Legend sheet shall include all symbols and line styles used in the project and immediately follow the General Note Sheet.

4) Geometric Layout:

The geometric sheets, normally drawn at 1"=100' scale, show a single line depicting the survey control lines. The survey control data (e.g. control points, curve data) shall be provided for all work and is to be presented to the hundredth of a foot or second of an arc. Ties to section monuments at crossroads are to be provided.

The following note is to appear on the first Geometric Sheet: "Coordinate values as shown are on ground datum. All bearings shown are ground"

Curves are to be designated as numeric or alphanumeric to best identify the curves. Curve data is to be tabulated in a manner similar to that shown in the attachment example. Matchlines are not required on geometric plan sheets.

5) Typical Section:

Typical Section Drawings should depict the varying configurations of the channel(s), storm drain alignment(s), dams, basins, etc. throughout the length of the project. The number of typical sections will depend on the number of significantly different section conditions. These drawings should be adequately dimensioned and depict structures, side slope, catch points, slope conditions, cut ditch dimensions, all drainage profile points and other pertinent information. At least one section should be provided that depicts all the facilities within the limits of the project right-of-way.

**4.8 Quantity Summary Category Drawings (QS)**

Quantity Summary Sheets list summarized quantities, dimensional data and other specifications pertinent for contractors during both the bidding and construction of the project. All plans shall include a Quantity Summary Sheet that lists each item for bid. A Quantity Summary Sheet is available on the District's internet site [www.FCD.Maricopa.gov](http://www.FCD.Maricopa.gov)

**4.9 Pipe Summary Category Drawings (PS)**

Pipe Summary Sheets list pipe sizes, types, class and other pertinent information for contractors during bidding and construction of the project. A Pipe Summary Sheet is available for the Consultant to download on the District's internet site. [WWW.FCD.Maricopa.gov](http://WWW.FCD.Maricopa.gov)

**4.10 Detail Category Drawings (D)**

These sheets provide details of all miscellaneous non-standard items necessary for construction of the project. MAG standard details called out in the project do not need to be placed in these Detail Sheets.

**4.11 Civil/Construction Category Drawings ( C )**

These sheets consist of the main design elements of the project and existing information relative to the design. The following subsections are items these sheets may also need.

- 1) All items of work on the sheet should be itemized on the right-hand of the sheet or if necessary, cross-referenced to another sheet in the set of plans. Information notes and work related to project features that is to be performed by others should be boxed.
- 2) The stations for all valves, manholes, etc. on a pipeline shall be shown with reference to the detail to be used in construction.
- 3) Show existing conflicts that may be encountered on the project, including utility locations and items to be removed or relocated by the contractor or by others.

- 4) Show existing utilities in plan view with the size and material indicated. The acronym for the name of the owner shall also be indicated when more than one owner for similar facilities are located within the project; such as Salt River Project-Power (SRP) and Arizona Public Service (APS) or Southwest Gas (SWG) and El Paso Natural Gas (EPNG).
- 5) Under no condition, where the relocated or future utility will cross over or under an existing utility, shall the note “elevation unknown” appear. It shall be the responsibility of the Consultant to request that the utilities in question be pot holed and the Consultant shall obtain the true elevation and location for accurate indication on the profile.
- 6) Existing utilities, which will cross above or below the main design element, shall be shown in the profile. Crossing facilities over 4-inches in size shall be drawn to scale. Lines less than 4-inches in size shall be shown using a vertical and horizontal line forming a 2 sided box with a letter between the lines such as: G for gas line, T for telephone, C for cable T.V., W for water, and E for electric power. The vertical line of the box will indicate the crossing location and the horizontal line will indicate the elevation of the bottom of the utility below grade.
- 7) On each sheet where a high pressure gas line appears, and specifically where another utility will cross the gas line, a caution note shall be boxed in and read “CAUTION HIGH PRESSURE GAS”.
- 8) On each sheet where overhead powerlines appear, and specifically where a utility will be constructed underneath the lines, a caution note shall be boxed in and read “CAUTION OVERHEAD POWER LINES”.

**4.12 Storm Drain Drawing Category (SD)**

These sheets are used when a storm drain pipe is a secondary design element of the project.

**4.13 Connector Pipe Drawing Category (CP)**

These sheets are used for short lateral pipes that connect to the main design element.

**4.14 Waterline Drawing Category (W)**

These sheets are used when a waterline is a secondary design element of the project.

**4.15 Sanitary Sewer Drawing Category (S)**

These sheets are used when a sanitary sewer pipe is a secondary design element of the project.

**4.16 Structure Drawing Category (ST)**

These sheets are used when a structure is a secondary design element of the project.

**4.17 Bridge Drawing Category (B)**

These sheets are used when a bridge is a secondary design element of the project.

**4.18 Landscaping Drawing Category (LS)**

These sheets are used when landscaping is a part of the project.

**4.19 Irrigation Drawing Category (IR)**

These sheets are used when irrigation is a part of the project.

**4.20 Soil Boring Drawing Category (SB)**

These sheets are used to show soil boring location and results.

**4.21 Cross-sections Drawing Category (XS)**

These sheets show cross-sections through the project along the construction centerline.

## SECTION 5: COLOR TABLE (DESIGNATIONS)

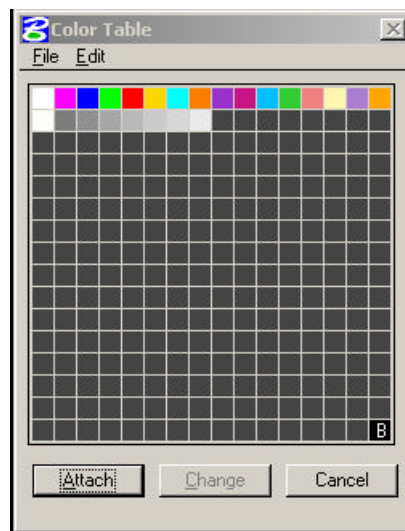
### 5.1 General

- 1) The Consultant shall use the color table that can be downloaded from the District's internet site [www.FCD.Maricopa.gov](http://www.FCD.Maricopa.gov). (See Figure 5.1)
- 2) Unless specified by the District the color shall be assigned by the Consultant using one of the colors provided in the color table.
  - f) Generally, the District uses colors 0-7 for design items and colors 0,8-15 for existing items.
  - g) Colors 16-23 are used only for gray-scale shaded items. The percent of ink that prints with each color number is listed in Figure 5.2: Grayscale Definition on the next page. Figure 5.2 was printed using a Xerox printer; results may vary depending on printer make.
  - h) The Consultant shall not use colors 24-254.
- 3) Colors used for new or existing utilities should correspond to colors used by blue stake, in the table below:

UTILITY	COLOR	COLOR TABLE NUMBER	
		PROPOSED	EXISTING
Power	Red	4	12
Gas	Yellow	5	13
Telephone	Orange	7	15
Water	Blue	2	10
Sanitary Sewer	Green	3	11
Reclaimed Water	Purple	1	8

- 4) The figure below shows the color table the District uses.

**Figure 5.1: The District's Color Table**









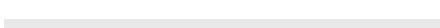




# **FCD ENGLISH CADD GUIDELINES, 2002**

## **FIGURE 5.2**

**Grayscale Colors Using Plotter Driver  
FCDPlot.plt**

<b>GRAPHIC DEFINITION</b>	<b>Color</b>	<b>Percent Black</b>
	<b>0-15</b>	<b>100%</b>
	<b>16</b>	<b>80%</b>
	<b>17</b>	<b>70%</b>
	<b>18</b>	<b>60%</b>
	<b>19</b>	<b>50%</b>
	<b>20</b>	<b>40%</b>
	<b>21</b>	<b>30%</b>
	<b>22</b>	<b>20%</b>
	<b>23</b>	<b>10%</b>

## SECTION 6: LEVEL STRUCTURE

### 6.1 Level Designation

#### LEVEL DESCRIPTION

1	grid ticks, line terminators
2	spot elevations
3	primary control points
4	section corners, monuments, boundaries: city etc.
5	Index contours
6	Intermediate contours
7	existing vegetation
8	mapping symbols
9	existing man made features
10	text for level 9
11	existing utilities
12	text for level 11
13	existing minor drainage items
14	text for levels 13 & 22
15	existing easements/property lines
16	existing edges of roads, curbs
17	existing ROW
18	miscellaneous existing text
19	road names (text for level 16)
20	FCD ROW & proposed property boundaries
21	temporary construction easement
22	existing major drainage items
23	stationing ticks & stationing text
24	unassigned (anything you question where it goes)
25	new fences
26	all misc. centerlines with id for PI, PT, PC
27	new construction centerline w/ticks
28	new construction centerline items
29	existing fences, ROW markers
30	new box culverts
31	new pipe culverts
32	new retaining walls
33	new basins (catch, retention, detention)
34	text for levels 30-33
35	new edges of pavement and access roads
36	text for level 35
37	new contours
38	new minor drainage items
39	text for levels 38 & 48
40	new utilities

41	text for level 40
42	new dikes and levees
43	new low flow channels
44	new misc. items (mow curbs, equestrian trails, etc.)
45	bridges new & existing
46	text for levels 42-45
47	text for levels 49 & 50
48	new major drainage items
49	Floodplain study results
50	new drainage easement
51	3D breaklines for import to Inroads
52	3D random points for graphic import
53	text for levels 51 & 52
54	sheet notes and symbols
55	Dimensions
56	north arrow, PE/Prelim. Stamps (misc. sheet items)
57	slope indicators/linear patterns
58	bank protection patterning
59	all other patterning and shading
60	standard major grid lines
61	standard minor grid lines
62	plan sheet text nodes
63	sheet borders

	=SHEET ITEMS
	=DETAILS/PATTERNING
	=NEW TEXT ITEMS
	=NEW ITEMS
	=EXISTING TOPO ITEMS
	=UNNASSIGNED
	=EXISTING LEGAL ITEMS
	=EXISTING TEXT ITEMS



## SECTION 7: LETTERING AND FONTS

### 7.1 Lettering

All lettering on drawings shall be plain and legible. The Consultant shall use the lettering sizes below:

1) Existing items:

On a full size plot, text for existing items shall be 0.125", line spacing shall be 0.0625" and weight shall be 1.

Example of text for existing item at 1"=100' scale:

Height = 12.5

Width = 12.5

Line Spacing = 6.25

Weight = 1

2) New items:

On a full size plot, text for new items shall be 0.15", line spacing shall be 0.075" and weight shall be 2.

Example of text for new items at 1"=100' scale:

Height = 15.0

Width = 15.0

Line Spacing = 7.5

Weight = 2

3) Titles:

On a full size plot, text for titles shall mostly be 0.20", line spacing shall be 0.10" and weight shall be 3. Titles may be larger or smaller as necessary.

Example of titles at 1"=100' scale:

Height = 20.0

Width = 20.0

Line Spacing = 11.0

Weight = 3

### 7.2 Fonts

The Consultant is encouraged to use a font from the District's font library. **The Consultant must use a font that comes standard with MicroStation Version 7 or Microsoft Windows 2000 or is in the font library of ADOT or MCDOT. If the Consultant uses a font other than those in the District's font library, the font shall not be numbered 31-39.** The font library should be downloaded from the District's internet site [www.FCD.Maricopa.gov](http://www.FCD.Maricopa.gov), and put as the last font resource file listed in the "symbology resource configuration variables". This way other downloaded materials from these guidelines will appear correct. The Consultant must submit a text file stating the names and numbers of all fonts used with the final submittal. For font key definitions refer to "Section 7.3 Font Definition." The following are the fonts in the District's font library:

Font 32 FCD Logo- Flood Control District's logo

Font 33 FCD Title Block – most title block text

Font 34 FCD – general text

Font 35 FCD-Circle symbols – construction notes

Font 36 FCD-Square symbols – removal notes

### 7.3 Font Definition

The following figures show the definition of characters used in the District's font library.


**Standard Keyboard**  
**Font: 32 and 33**

~ `	! 1	@ 2	# 3	\$ 4	% 5	^ 6	& 7	* 8	( 9	) 0	- _	+ =	 \	DEL
TAB		Q	W	E	R	T	Y	U	I	O	P	{ [	}	]
CAPS LOCK		A	S	D	F	G	H	J	K	L	; :	' "	ENTER	
SHIFT		Z	X	C	V	B	N	M	< ,	> .	? /	SHIFT		
CTRL	ALT			ALT							CTRL			

**Figure 7.1: Fonts 32-33 Key Definitions**


Ø	1	2	3	4	5	6	7	8	9	0	-	=	DEL
TAB	q	w	e	r	t	y	u	i	o	p	€	Ⓜ	
CAPS LOCK	a	s	d	f	g	h	j	k	l	;	,	ENTER	
SHIFT	z	x	c	v	b	n	m	,	.	/	SHIFT		
CTRL	ALT		ALT								CTRL		

Font: 34 FCD  
 Keys without  
 holding shift button

 = Changed Keys

~	!	@	#	\$	%	°	&	*	(	)	-	+	△ DEL
TAB	Q	W	E	R	T	Y	U	I	O	P	⌘		
CAPS LOCK	A	S	D	F	G	H	J	K	L	:	"	ENTER	
SHIFT	Z	X	C	V	B	N	M	Ⓟ	±	?	SHIFT		
CTRL	ALT		ALT								CTRL		

Font: 34 FCD  
 Keys holding  
 shift button

 = Changed Keys

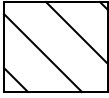
 = Key Not Used

Figure 7.2: Font 34 Key Definitions

	1	2	3	4	5	6	7	8	9	10				DEL
TAB	11	12	13	14	15	16	17	18	19	20				
CAPS LOCK	21	22	23	24	25	26	27	28	29	30				ENTER
SHIFT	31	32	33	34	35	36								SHIFT
CTRL			ALT								ALT			CTRL

Font: 35 FCD-Circle Symbols  
 Keys without  
 holding shift button

 = Key Not Used

	37	38	39	40	41	42	43	44	45	46				DEL
TAB	47	48	49	50	51	52	53	54	55	56				
CAPS LOCK	57	58	59	60	61	62	63	64	65	66				ENTER
SHIFT	67	68	69	70	71	72								SHIFT
CTRL			ALT								ALT			CTRL

Font: 35 FCD-Circle Symbols  
 Keys holding  
 shift button

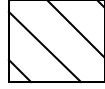
 = Key Not Used

Figure 7.3: Font 35 Key Definitions

		1	2	3	4	5	6	7	8	9	10				DEL
TAB	11	12	13	14	15	16	17	18	19	20					
CAPS LOCK	21	22	23	24	25	26	27	28	29					ENTER	
SHIFT	30	31	32	33	34	35	36							SHIFT	
CTRL		ALT								ALT					CTRL

Font: 36 FCD-Square Symbols  
 Keys without  
 holding shift button

 = Key Not Used

		37	38	39	40	41	42	43	44	45	46				DEL
TAB	47	48	49	50	51	52	53	54	55	56					
CAPS LOCK	57	58	59	60	61	62	63	64	65					ENTER	
SHIFT	66	67	68	69	70	71	72							SHIFT	
CTRL		ALT								ALT					CTRL

Font: 36 FCD-Square Symbols  
 Keys holding  
 shift button

 = Key Not Used

Figure 7.4: Font 36 Key Definitions

## SECTION 8: LINE WEIGHTS AND LIFESTYLES

### 8.1 Line Weights

Unless directed otherwise, line weights shall be set by the Consultant in a manner that is clear and legible.

- 1) Line weights as plotted with the District's plot driver (FCDplot.plt) are shown in Table 8.1.

### 8.2 Line Styles

The Consultant shall only use internal MicroStation line styles 0-7 and the District's custom line style library. The line style library is available to download on the District internet site, [www.FCD.Maricopa.gov](http://www.FCD.Maricopa.gov). For line style definitions see "Section 8.3 Line Style Definitions".

### 8.3 Line Style Definitions

Custom line styles defined below are drawn so that when no scale factor is applied they will appear correct at 1"=100' scale, except the proposed storm drain line styles. The proposed storm drain lines are drawn to exact size of the pipe so a scale factor should never be used (see example 2 below). The line style names, definitions, and description follow on the next 6 pages.

Example:

If you are placing a "Cut Line" on a sheet that will be plotted at 1"=40', in the custom line styles dialog box, you would need to apply a scale factor of 0.4 to the line when it is placed.

Example 2:

If you are placing a "PIPE24" line (Proposed 24" Storm Drain) on a sheet that will be plotted at 1"=40' there should not be any scale factor applied to that line. The line is drawn so that when scaled on a sheet it will be 2 feet wide.

# FCD ENGLISH CADD STANDARD



## LINESTYLE DEFINITIONS

RESOURCE FILE=S:\ENG\STANDARDS\  
FCDLINES.RSC

### GRAPHIC DEFINITION

### Name (Added Information)

— — — — —

CL (Centerline)

—C—C—C—C—

Cut Line

—FO—FO—FO—

FiberOptic (Fiber Optic Line)

—F—F—F—F—

FILL (Fill Line)

— | — | — | —

Forest/Res Line (Forest or Indian Boundary)

—HPG—HPG—HPG—

HPrsureGas (High Pressure Gas Line)

—IR—IR—IR—

Irrigation Line

—o—o—o—o—

New Chain Link (Fence)

—x—x—x—x—

New Fence (Other than Chain Link  
Block & Wood)

—G—G—G—G—

New Gas Line (all sizes)

—OP—OP—OP—OP—

New OHead Power

—OT—OT—OT—OT—

New OHead Tele. (Overhead Telephone)

— — — — —

New Retaining Wall

— — — — —

New ROW

—S—S—S—S—S—

New SanSewer Line

—P—P—P—P—P—

New UGrnd Power

—T—T—T—T—T—

New Ugrnd Tele (Underground Telephone)

Note: Graphic Definition Shown At 1/2 Size

# FCD ENGLISH CADD STANDARD



## LINESTYLES

RESOURCE FILE=S:\ENG\STANDARDS\  
FCDLINES.RSC

### GRAPHIC DEFINITION

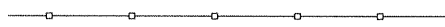
### Name (Added Information)



New UGrnd TV



New Water Line



New Wood Fence



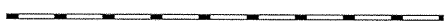
PIPE15 (Proposed 15" Storm Drain)



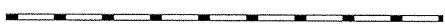
PIPE18 (Proposed 18" Storm Drain)



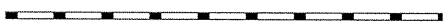
PIPE24 (Proposed 24" Storm Drain)



PIPE30 (Proposed 30" Storm Drain)



PIPE36 (Proposed 36" Storm Drain)



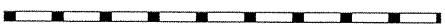
PIPE42 (Proposed 42" Storm Drain)



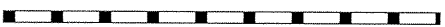
PIPE48 (Proposed 48" Storm Drain)



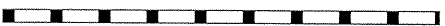
PIPE54 (Proposed 54" Storm Drain)



PIPE60 (Proposed 60" Storm Drain)



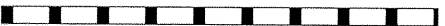
PIPE72 (Proposed 72" Storm Drain)



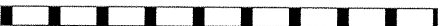
PIPE84 (Proposed 84" Storm Drain)



PIPE96 (Proposed 96" Storm Drain)



PIPE108 (Proposed 108" Storm Drain)



PIPE120 (Proposed 120" Storm Drain)

Note: Graphic Definition Shown At 1/2 Size



# FCD ENGLISH CADD STANDARD



## LINESTYLES

RESOURCE FILE=S:\ENG\STANDARDS\  
FCDLINES.RSC

### GRAPHIC DEFINITION

### Name (Added Information)

	Section Line
	TCE (Temporary Construction Easement)
	Tree Line
	Wash FL (flowline)
	WSE (Water Surface Elevation, Profile Only)
	WSE-Prop (Proposed Water Surface Elev)
	XBlock wall (Existing Block Wall)
	XChain link (Existing Chain Link Fence)
	XFence (Other than chain link and wood)
	XGas (Gas Line other than sizes listed)

Note: Graphic Definition Shown At 1/2 Size

# FCD ENGLISH CADD STANDARD

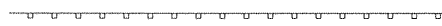


## LINESTYLE DEFINITIONS

RESOURCE FILE=S:\ENG\STANDARDS\  
FCDLINES.RSC

### GRAPHIC DEFINITION

### Name (Added Information)



*XGuardrail right*



*XIrrigation line*



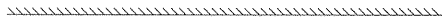
*XOHead power*



*XOHead Tele.*



*XRetaining wall*



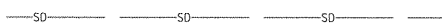
*XRoad (Existing edge of paved road)*



*XROW (Existing ROW)*



*XSanSewer line (All Sizes)*



*XStormDrain (Other Than Sizes Listed)*



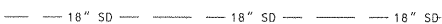
*XStorm Drain 10"*



*XStrom Drain 12"*



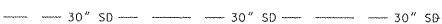
*XStorm Drain 15"*



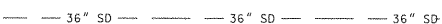
*XStorm Drain 18"*



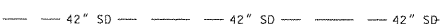
*XStrom Drain 24"*



*XStrom Drain 30"*



*XStorm Drain 36"*



*XStorm Drain 42"*

*Note: Graphic Definition Shown At 1/2 Size*

# FCD ENGLISH CADD STANDARD



## LINESTYLES

RESOURCE FILE=S:\ENG\STANDARDS\  
FCDLINES.RSC

GRAPHIC DEFINITION	Name (Added Information)
— — 48" SD — — — — 48" SD — — — — 48" SD	XStorm Drain 48"
— — 60" SD — — — — 60" SD — — — — 60" SD	XStorm Drain 60"
— — 72" SD — — — — 72" SD — — — — 72" SD	XStorm Drain 72"
— — 84" SD — — — — 84" SD — — — — 84" SD	XStorm Drain 84"
-E — — — — —E — — — — —E — — — —	XUGrnd Power
-T — — — — —T — — — — —T — — — —	XUGrnd Tele
-TV — — — — —TV — — — — —TV — — — —	XUGrnd TV
— — 12" W — — — — 12" W — — — — 12" W —	XWater 12"
— — 16" W — — — — 16" W — — — — 16" W —	XWater 16"
— — 2" W — — — — 2" W — — — — 2" W —	XWater 2"
— — 20" W — — — — 20" W — — — — 20" W —	XWater 20"
— — 24" W — — — — 24" W — — — — 24" W —	XWater 24"
— — 30" W — — — — 30" W — — — — 30" W —	XWater 30"
— — 36" W — — — — 36" W — — — — 36" W —	XWater 36"
— — 4" W — — — — 4" W — — — — 4" W —	XWater 4"
— — 6" W — — — — 6" W — — — — 6" W —	XWater 6"
— — 8" W — — — — 8" W — — — — 8" W —	XWater 8"

Note: Graphic Definition Shown At 1/2 Size

# FCD ENGLISH CADD STANDARD



## LINESTYLES

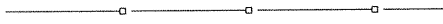
RESOURCE FILE=S:\ENG\STANDARDS\  
FCDLINES.RSC

### GRAPHIC DEFINITION

### Name (Added Information)



XWater line (Other than sizes listed)














XWood fence

Note: Graphic Definition Shown At 1/2 Size



*FCD ENGLISH CADD GUIDELINES, 2002*  
**TABLE 8.1**  
*Lineweights Using Plotter Driver*  
*FCDPlot.plt*

<i>GRAPHIC DEFINITION</i>	<i>Weight</i>	<i>Thickness</i>
	0	0.001"
	1	0.003"
	2	0.006"
	3	0.009"
	4	0.012"
	5	0.015"
	6	0.018"
	7	0.021"
	8	0.024"
	9	0.027"
	10	0.030"

## **SECTION 9: PLOT DRIVERS**

### **9.1 Grayscale Plots**

- 1) The Consultant shall use the grayscale plot driver (FCDplot.plt) provided when submitting construction plans. The plot drivers are available to download on the District's internet site, [www.FCD.Maricopa.gov](http://www.FCD.Maricopa.gov).
- 2) The plot driver is line weight driven on colors 0-15 and color driven for colors 16-23 (the grayscale colors).

### **9.2 Color Plots**

- 1) The Consultant will not be required to use the color plot driver (FCDcolor.plt) provided.
- 2) Color plots are not acceptable for submitting construction plans unless otherwise directed in the Project Scope of Work.

The color plot driver (FCDcolor.plt) is both weight and color driven.

## **SECTION 10: CELL LIBRARY**

### **10.1 Cell Library**

The Consultant is not required to use the District's cell library. The cell library is available for download on the District's internet site [www.FCD.Maricopa.gov](http://www.FCD.Maricopa.gov). The Consultant shall place all cells and symbols used on the project in the Legend Sheet.

### **10.2 Cell Definition**

The cells are drawn so that when placed with a scale factor of 1 (no scale factor) they will appear correctly on a sheet that has a scale of 1"=100'. This applies for all cells except the bar scale cells which should always be placed with no scale factor. The bar scale cells begin with the letters BAR followed by a number representing the scale (see example 2 below). The names, descriptions, graphic definition and parameters are on the following sheets.

Example:

If you place the cell "BCHH" (brass cap in hand hole) into a sheet that will be plotted at 1"=40' the cell should be placed with a scale factor of 0.4.

Example 2:

To place a bar scale on a sheet which will be plotted at 1"=40' place the cell BAR40 with no scale factor.

**CELL LIST:**

Sorted By Name

<u>NAME</u>	<u>SECTION</u>	<u>PAGE</u>
BAR10	SHEET SYMBOL	1
BAR100	SHEET SYMBOL	2
BAR20	SHEET SYMBOL	3
BAR40	SHEET SYMBOL	4
BAR5	SHEET SYMBOL	5
BAR50	SHEET SYMBOL	6
BCHH	SURVEY/CONTROL	7
BLUSTK	SHEET SYMBOL	8
BM	SURVEY/CONTROL	9
BRC	SURVEY/CONTROL	10
BUSH	VEGETATION	11
CACTUS	VEGETATION	12
CB	UTILITIES	13
CHS	SURVEY/CONTROL	14
CONCLN	PATTERNS	15
CONCPT	PATTERNS	16
CONTRL	SURVEY/CONTROL	17
CP	SURVEY/CONTROL	18
EMH	UTILITIES	19
EMTR	UTILITIES	20
ERM	SURVEY/CONTROL	21
ERTHPT	PATTERNS	22
FCD	SHEET SYMBOL	23
FCDWWW	SHEET SYMBOL	24
FCE	CROSS-SECTIONAL VIEWS	25
FH	UTILITIES	26
FLOW	CHANNEL DESCRIPTORS	27
GDAC	SURVEY/CONTROL	28
GMTR	UTILITIES	29
GRASPT	PATTERNS	30
GVLV	UTILITIES	31
IP	SURVEY/CONTROL	32
IRMH	UTILITIES	33
LGHTPL	UTILITIES	34
LLDR	DIMENSION LEADERS	35
NRTHAR	SHEET SYMBOL	36
PALMTR	VEGETATION	37
PP	UTILITIES	38
PRELIM	SHEET SYMBOL	39
RB	SURVEY/CONTROL	40
RBC	SURVEY/CONTROL	41
RIPRAP	PATTERNS	42
RLDR	DIMENSION LEADERS	43
ROW	CROSS-SECTIONAL VIEWS	44
SANDPT	PATTERNS	45
SCNR	SURVEY/CONTROL	46
SDMH	UTILITIES	47
SLCMPT	PATTERNS	48
SLOPEN	CHANNEL DESCRIPTORS	49
SLOPEX	CHANNEL DESCRIPTORS	50
SLPILN	PATTERNS	51



SLP2LN	PATTERNS	52
SSMH	UTILITIES	53
TLDE	DIMENSION LEADERS	54
TMH	UTILITIES	55
TP	UTILITIES	56
TREE	VEGETATION	57
TRNTWR	UTILITIES	58
WELL	UTILITIES	59
WMH	UTILITIES	60
WMTR	UTILITIES	61
WVLV	UTILITIES	62

**CELL LIST:**

Sorted By Section

<u>NAME</u>	<u>SECTION</u>	<u>PAGE</u>
FLOW	CHANNEL DESCRIPTORS	27
SLOPEN	CHANNEL DESCRIPTORS	49
SLOPEX	CHANNEL DESCRIPTORS	50
FCE	CROSS-SECTIONAL VIEWS	25
ROW	CROSS-SECTIONAL VIEWS	44
LLDR	DIMENSION LEADERS	35
RLDR	DIMENSION LEADERS	43
TLDE	DIMENSION LEADERS	54
CONCLN	PATTERNS	15
CONCPT	PATTERNS	16
ERTHPT	PATTERNS	22
GRASPT	PATTERNS	30
RIPRAP	PATTERNS	42
SANDPT	PATTERNS	45
SLCMPT	PATTERNS	48
SLP1LN	PATTERNS	51
SLP2LN	PATTERNS	52
BAR10	SHEET SYMBOL	1
BAR100	SHEET SYMBOL	2
BAR20	SHEET SYMBOL	3
BAR40	SHEET SYMBOL	4
BAR5	SHEET SYMBOL	5
BAR50	SHEET SYMBOL	6
BLUSTK	SHEET SYMBOL	8
FCD	SHEET SYMBOL	23
FCDWWW	SHEET SYMBOL	24
NRTHAR	SHEET SYMBOL	36
PRELIM	SHEET SYMBOL	39
BCHH	SURVEY/CONTROL	7
BM	SURVEY/CONTROL	9
BRC	SURVEY/CONTROL	10
CHS	SURVEY/CONTROL	14
CONTRL	SURVEY/CONTROL	17
CP	SURVEY/CONTROL	18
ERM	SURVEY/CONTROL	21
GDAC	SURVEY/CONTROL	28
IP	SURVEY/CONTROL	32
RB	SURVEY/CONTROL	40
RBC	SURVEY/CONTROL	41
SCNR	SURVEY/CONTROL	46
CB	UTILITIES	13
EMH	UTILITIES	19
EMTR	UTILITIES	20
FH	UTILITIES	26
GMTR	UTILITIES	29
GVLV	UTILITIES	31
IRMH	UTILITIES	33
LGHTPL	UTILITIES	34
PP	UTILITIES	38
SDMH	UTILITIES	47
SSMH	UTILITIES	53

TMH	UTILITIES	55
TP	UTILITIES	56
TRNTWR	UTILITIES	58
WELL	UTILITIES	59
WMH	UTILITIES	60
WMTR	UTILITIES	61
WVLV	UTILITIES	62
BUSH	VEGETATION	11
CACTUS	VEGETATION	12
PALMTR	VEGETATION	37
TREE	VEGETATION	57

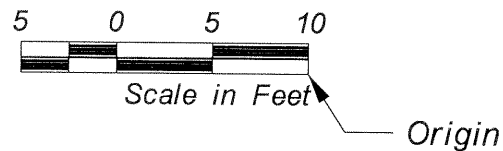
# FCD ENGLISH CADD STANDARD



CELL NAME= BAR10

DESCRIPTION= BAR SCALE FOR 1"=10'

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL	=56	FONT	=34
COLOR	=0,3	TEXT HEIGHT	=1.1
STYLE	=0	LINE SPACE	=0.55
WEIGHT	=2	TEXT JUST.	=

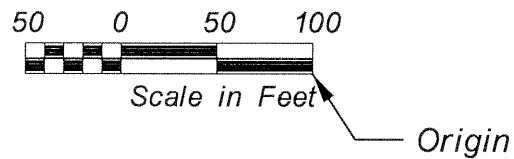
# FCD ENGLISH CADD STANDARD



CELL NAME= BAR100

DESCRIPTION= BAR SCALE FOR 1"=100'

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL	=56	FONT	=34
COLOR	=0,3	TEXT HEIGHT	=11
STYLE	=0	LINE SPACE	=5.5
WEIGHT	=2	TEXT JUST.	=

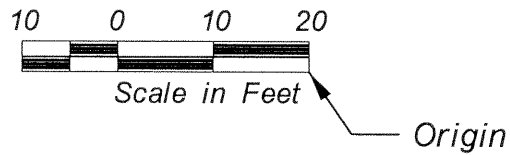
# FCD ENGLISH CADD STANDARD



CELL NAME= BAR20

DESCRIPTION= BAR SCALE FOR 1"=20'

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL	=56	FONT	=34
COLOR	=0,3	TEXT HEIGHT	=2.2
STYLE	=0	LINE SPACE	=1.1
WEIGHT	=2	TEXT JUST.	=

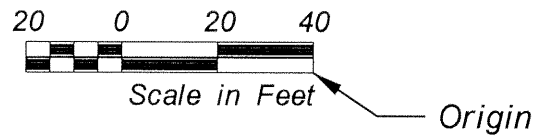
# FCD ENGLISH CADD STANDARD



CELL NAME= BAR40

DESCRIPTION= BAR SCALE FOR 1"=40'

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =56	FONT =34
COLOR =0,3	TEXT HEIGHT =4.4
STYLE =0	LINE SPACE =2.2
WEIGHT =2	TEXT JUST. =

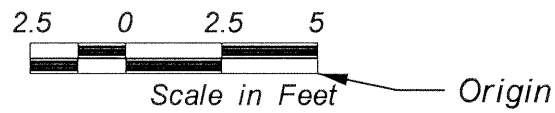
# FCD ENGLISH CADD STANDARD



CELL NAME= BAR5

DESCRIPTION= BAR SCALE FOR 1"=5'

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =56

FONT =34

COLOR =0,3

TEXT HEIGHT =0.55

STYLE =0

LINE SPACE =0.275

WEIGHT =2

TEXT JUST. =



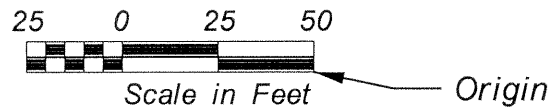
# FCD ENGLISH CADD STANDARD



CELL NAME= BAR50

DESCRIPTION= BAR SCALE FOR 1"=50'

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =56

FONT =34

COLOR =0,3

TEXT HEIGHT =5.5

STYLE =0

LINE SPACE =2.75

WEIGHT =2

TEXT JUST. =

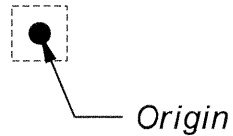
# FCD ENGLISH CADD STANDARD



CELL NAME= BCHH

DESCRIPTION= BRASS CAP IN HAND HOLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

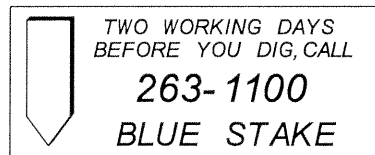
# FCD ENGLISH CADD STANDARD



CELL NAME= BLUSTK

DESCRIPTION= BLUE STAKE SYMBOL

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =56

FONT =34

COLOR =0, 2

TEXT HEIGHT =15, 12.5, 8

STYLE =0

LINE SPACE =7.5, 6.25, 4

WEIGHT =2

TEXT JUST. =

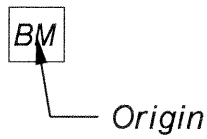
# FCD ENGLISH CADD STANDARD



CELL NAME= BM

DESCRIPTION= BENCH MARK

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3	FONT =34
COLOR =0	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CC

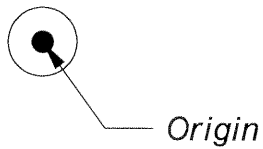
# FCD ENGLISH CADD STANDARD



CELL NAME= BRC

DESCRIPTION= BRASS CAP

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

*FCD ENGLISH CADD STANDARD*



*CELL NAME= BUSH*

*DESCRIPTION= EXISTING BUSH/SHRUB*

*GRAPHIC DEFINITION*



*SHOWN 2.5X ACTUAL SIZE*

*PARAMETERS*

<i>LEVEL =7</i>	<i>FONT =</i>
<i>COLOR =11</i>	<i>TEXT HEIGHT =</i>
<i>STYLE =0</i>	<i>LINE SPACE =</i>
<i>WEIGHT =1</i>	<i>TEXT JUST. =</i>

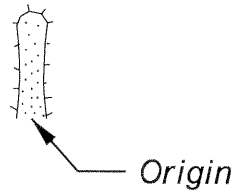
# FCD ENGLISH CADD STANDARD



CELL NAME= CACTUS

DESCRIPTION= EXISTING CACTUS

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =7	FONT =
COLOR =11	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

# FCD ENGLISH CADD STANDARD



CELL NAME= CB

DESCRIPTION= CATCH BASIN

## GRAPHIC DEFINITION



Origin

SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =13

FONT =

COLOR =12

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1,2

TEXT JUST. =



*FCD ENGLISH CADD STANDARD*



*CELL NAME= CHS*

*DESCRIPTION= CHISELED "X"*

*GRAPHIC DEFINITION*



*Origin*

*SHOWN 2.5X ACTUAL SIZE*

*PARAMETERS*

<i>LEVEL =3</i>	<i>FONT =</i>
<i>COLOR =0</i>	<i>TEXT HEIGHT =</i>
<i>STYLE =0</i>	<i>LINE SPACE =</i>
<i>WEIGHT =1</i>	<i>TEXT JUST. =</i>

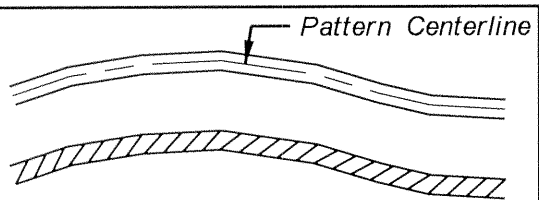
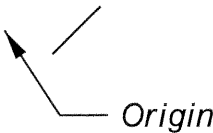
# FCD ENGLISH CADD STANDARD



CELL NAME= CONCLN

DESCRIPTION= PROPOSED CONCRETE LINEAR  
PATTERN.  
USE CELL AS A LINEAR PATTERN TO  
PATTERN THE CENTERLINE OF A PROPOSED  
CONCRETE MAINTENANCE ROAD OR SIDEWALK

## GRAPHIC DEFINITION



EXAMPLE

SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =57	FONT =
COLOR =6	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =2	TEXT JUST. =

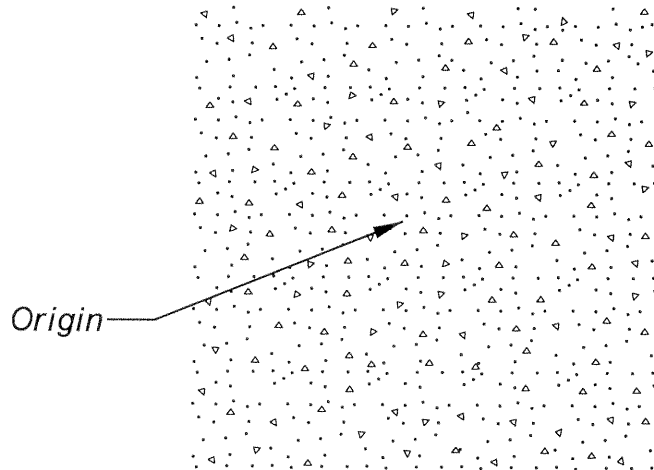
# FCD ENGLISH CADD STANDARD



CELL NAME= CONCEPT

DESCRIPTION= EXISTING CONCRETE PATTERN

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =59

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

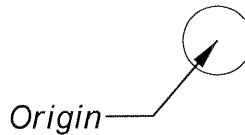
# FCD ENGLISH CADD STANDARD



CELL NAME= CONTRL

DESCRIPTION= MISCELLANEOUS CONTROL POINT  
(NAIL, PK, ETC.)

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

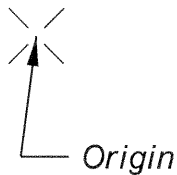
FCD ENGLISH CADD STANDARD



CELL NAME= CP

DESCRIPTION= CHECK SHOT ON CONTROL POINT

GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

PARAMETERS

LEVEL =3	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

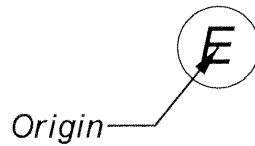
# FCD ENGLISH CADD STANDARD



CELL NAME= EMH

DESCRIPTION= ELECTRIC MANHOLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =34
COLOR =9	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CC

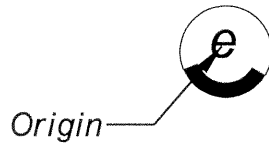
# FCD ENGLISH CADD STANDARD



CELL NAME= EMTR

DESCRIPTION= ELECTRIC METER

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =34
COLOR =9	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CC

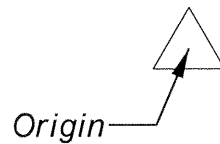
# FCD ENGLISH CADD STANDARD



CELL NAME= ERM

DESCRIPTION= ELEVATION REFERENCE MARK

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =



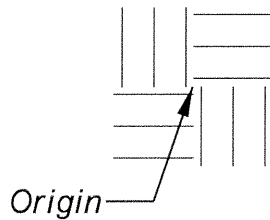
# FCD ENGLISH CADD STANDARD



CELL NAME= ERTHPT

DESCRIPTION= EARTH PATTERN

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =59	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

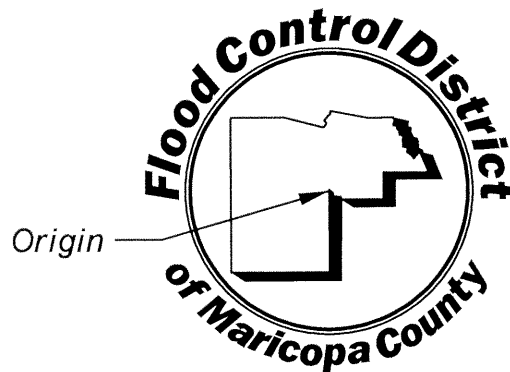
## FCD ENGLISH CADD STANDARD



CELL NAME= FCD

DESCRIPTION= FLOOD CONTROL DISTRICT'S LOGO

### GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

### PARAMETERS

LEVEL	=56	FONT	=32
COLOR	=0, 2, 3, 5	TEXT HEIGHT	=18
STYLE	=0	LINE SPACE	=9
WEIGHT	=2	TEXT JUST.	=

## FCD ENGLISH CADD STANDARD



CELL NAME= FCDWWW

DESCRIPTION= FLOOD CONTROL DISTRICT'S LOGO  
WITH THE DISTRICT'S INTERNET SITE

### GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

### PARAMETERS

LEVEL	=56	FONT	=32
COLOR	=0, 2, 3, 5	TEXT HEIGHT	=18
STYLE	=0	LINE SPACE	=9
WEIGHT	=2	TEXT JUST.	=

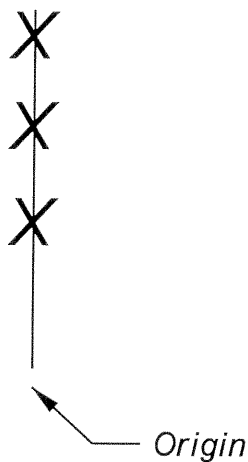
FCD ENGLISH CADD STANDARD



CELL NAME= FCE

DESCRIPTION= EXISTING FENCE FOR CROSS SECTIONS

GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

PARAMETERS

LEVEL =29	FONT =
COLOR =11	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

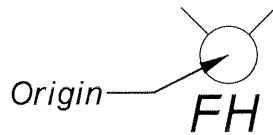
# FCD ENGLISH CADD STANDARD



CELL NAME= FH

DESCRIPTION= FIRE HYDRANT

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =34
COLOR =10	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CT

# FCD ENGLISH CADD STANDARD



CELL NAME= FLOW

DESCRIPTION= FLOW DIRECTION ARROW

## GRAPHIC DEFINITION



SHOWN 2X ACTUAL SIZE

## PARAMETERS

LEVEL	=49	FONT	=3
COLOR	=6	TEXT HEIGHT	=17.5
STYLE	=WASH FL	LINE SPACE	=10
WEIGHT	=2	TEXT JUST.	=

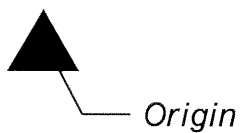
# FCD ENGLISH CADD STANDARD



CELL NAME= GDAC

DESCRIPTION= GDAC CONTROL POINT

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

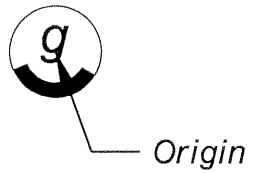
# FCD ENGLISH CADD STANDARD



CELL NAME= GMTR

DESCRIPTION= GAS METER

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11

FONT =34

COLOR =5

TEXT HEIGHT =8

STYLE =0

LINE SPACE =4

WEIGHT =1

TEXT JUST. =CC



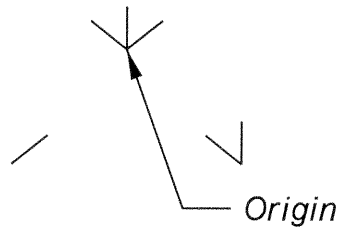
# FCD ENGLISH CADD STANDARD



CELL NAME= GRASPT

DESCRIPTION= GRASS PATTERN

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =59	FONT =
COLOR =10	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

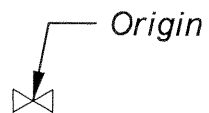
# FCD ENGLISH CADD STANDARD



CELL NAME= GVLV

DESCRIPTION= GAS VALVE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =
COLOR =5	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

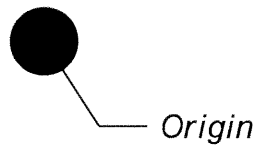
# FCD ENGLISH CADD STANDARD



CELL NAME= IP

DESCRIPTION= IRON PIPE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

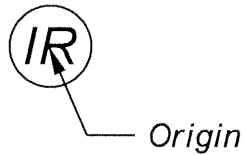
# FCD ENGLISH CADD STANDARD



CELL NAME= IRMH

DESCRIPTION= IRRIGATION MANHOLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL	=13	FONT	=34
COLOR	=12	TEXT HEIGHT	=8
STYLE	=0	LINE SPACE	=4
WEIGHT	=1	TEXT JUST.	=CC

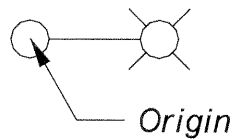
# FCD ENGLISH CADD STANDARD



CELL NAME= LGHTPL

DESCRIPTION= LIGHT POLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =
COLOR =9	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

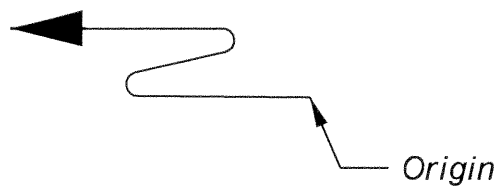
# FCD ENGLISH CADD STANDARD



CELL NAME= LLDR

DESCRIPTION= LEFT AREA LEADER

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL = 54	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =2	TEXT JUST. =

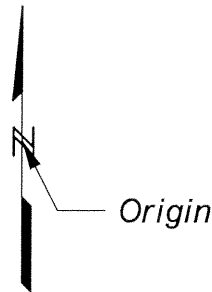
# FCD ENGLISH CADD STANDARD



CELL NAME= NRTHAR

DESCRIPTION= NORTH ARROW

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =56

FONT =

COLOR =0,4

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =2

TEXT JUST. =

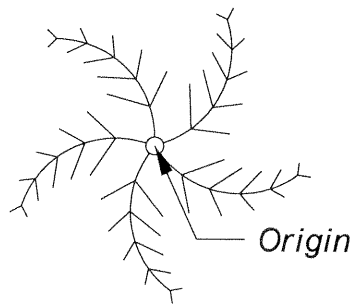
## FCD ENGLISH CADD STANDARD



CELL NAME= PALMTR

DESCRIPTION= PALM TREE

### GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

### PARAMETERS

LEVEL =7	FONT =
COLOR =11	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =



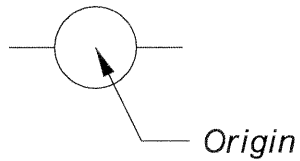
# FCD ENGLISH CADD STANDARD



CELL NAME= PP

DESCRIPTION= POWER POLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11

FONT =

COLOR =9

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

# FCD ENGLISH CADD STANDARD



CELL NAME= PRELIM

DESCRIPTION= PRELIMINARY STAMP

## GRAPHIC DEFINITION

PRELIMINARY  
NOT FOR  
CONSTRUCTION *Origin*

SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =56

FONT =33

COLOR =0

TEXT HEIGHT =12.5

STYLE =0

LINE SPACE =6.25

WEIGHT =2

TEXT JUST. =CC

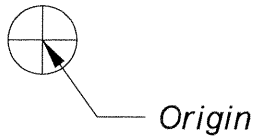
# FCD ENGLISH CADD STANDARD



CELL NAME= RB

DESCRIPTION= REBAR

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

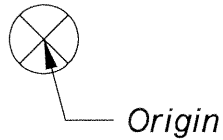
# FCD ENGLISH CADD STANDARD



CELL NAME= RBC

DESCRIPTION= REBAR WITH CAP

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =3	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

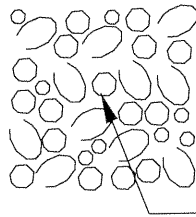
# FCD ENGLISH CADD STANDARD



CELL NAME= RIPRAP

DESCRIPTION= RIP RAP PATTERN

## GRAPHIC DEFINITION



Origin

SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =58

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

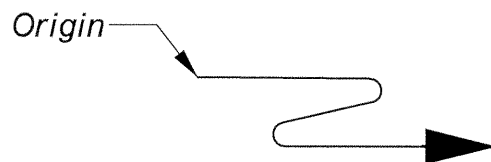
# FCD ENGLISH CADD STANDARD



CELL NAME= RLDR

DESCRIPTION= RIGHT AREA LEADER

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL = 54	FONT =
COLOR = 0	TEXT HEIGHT =
STYLE = 0	LINE SPACE =
WEIGHT = 2	TEXT JUST. =

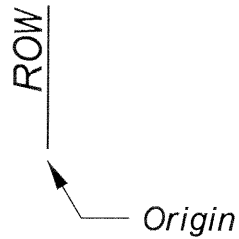
# FCD ENGLISH CADD STANDARD



CELL NAME= ROW

DESCRIPTION= RIGHT OF WAY SYMBOL FOR CROSS SECTION VIEW

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL	=15	FONT	=34
COLOR	=14	TEXT HEIGHT	=15
STYLE	=0	LINE SPACE	=7.5
WEIGHT	=2	TEXT JUST.	=LB

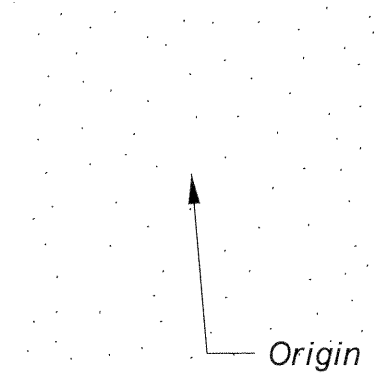
# FCD ENGLISH CADD STANDARD



CELL NAME= SANDPT

DESCRIPTION= SAND PATTERN FOR VARIOUS ITEMS

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =59

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =



# FCD ENGLISH CADD STANDARD

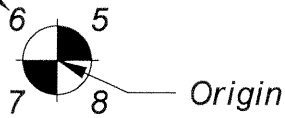


CELL NAME= SCNR

DESCRIPTION= SECTION CORNER

## GRAPHIC DEFINITION

Section Numbers Are  
Not Part Of The Cell



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =2

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =2

TEXT JUST. =

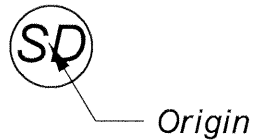
# FCD ENGLISH CADD STANDARD



CELL NAME= SDMH

DESCRIPTION= STORM DRAIN MANHOLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =13	FONT =34
COLOR =12	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CC

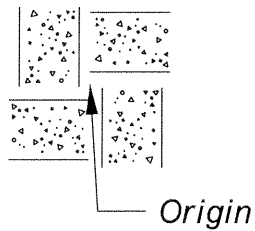
# FCD ENGLISH CADD STANDARD



CELL NAME= SLCMPT

DESCRIPTION= SOIL CEMENT PATTERN

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =59

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

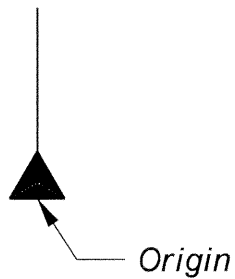
# FCD ENGLISH CADD STANDARD



CELL NAME= SLOPEN

DESCRIPTION= PROPOSED SLOPE INDICATOR

## GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

## PARAMETERS

LEVEL =57

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =2

TEXT JUST. =

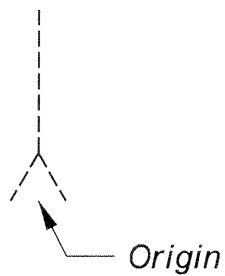
## FCD ENGLISH CADD STANDARD



CELL NAME= SLOPEX

DESCRIPTION= EXISTING SLOPE INDICATOR

### GRAPHIC DEFINITION



SHOWN ACTUAL SIZE

### PARAMETERS

LEVEL =57

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

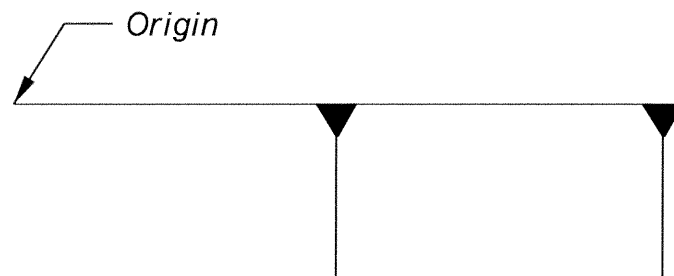
# FCD ENGLISH CADD STANDARD



CELL NAME= SLP1LN

DESCRIPTION= LEVEE SLOPE INDICATOR  
(LINEAR PATTERN)

## GRAPHIC DEFINITION



SHOWN 2X ACTUAL SIZE

## PARAMETERS

LEVEL =57	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =2	TEXT JUST. =

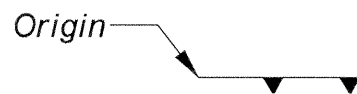
# FCD ENGLISH CADD STANDARD



CELL NAME= SLP2LN

DESCRIPTION= LOW FLOW SLOPE INDICATORS  
(LINEAR PATTERN)

## GRAPHIC DEFINITION



SHOWN 2X ACTUAL SIZE

## PARAMETERS

LEVEL =57

FONT =

COLOR =0

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =2

TEXT JUST. =

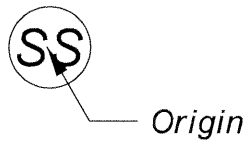
# FCD ENGLISH CADD STANDARD



CELL NAME= SSMH

DESCRIPTION= SANITARY SEWER MANHOLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL	=11	FONT	=34
COLOR	=11	TEXT HEIGHT	=8
STYLE	=0	LINE SPACE	=4
WEIGHT	=1	TEXT JUST.	=CC



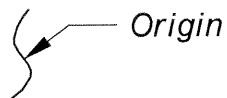
# FCD ENGLISH CADD STANDARD



CELL NAME= TLDE

DESCRIPTION= TILDE TERMINATOR SYMBOL

## GRAPHIC DEFINITION



DIMENSION SETTING:  
TERMINATORS--GEOMETRY  
WIDTH=0.3  
HEIGHT=1.5

SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =55	FONT =
COLOR =0	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =2	TEXT JUST. =

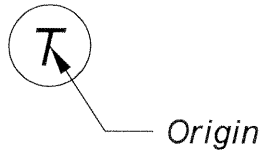
## FCD ENGLISH CADD STANDARD



CELL NAME= TMH

DESCRIPTION= TELEPHONE MANHOLE

### GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

### PARAMETERS

LEVEL =11	FONT =34
COLOR =7	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CC

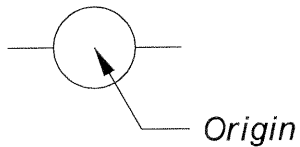
# FCD ENGLISH CADD STANDARD



CELL NAME= TP

DESCRIPTION= TELEPHONE POLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11

FONT =

COLOR =7

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

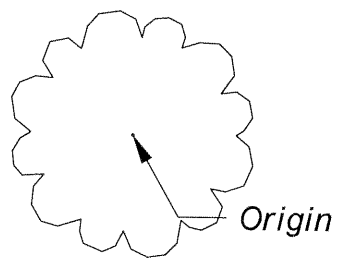
# FCD ENGLISH CADD STANDARD



CELL NAME= TREE

DESCRIPTION= ALL TREES EXCEPT PALM TREES

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =7	FONT =
COLOR =11	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

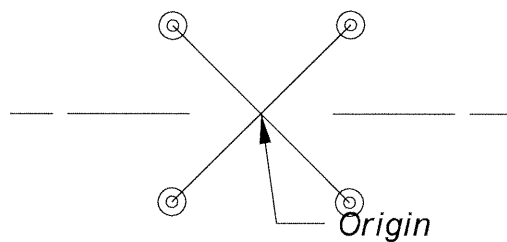
# FCD ENGLISH CADD STANDARD



CELL NAME= TRNTWR

DESCRIPTION= TRANSMISSION TOWER

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =
COLOR =9	TEXT HEIGHT =
STYLE =0	LINE SPACE =
WEIGHT =1	TEXT JUST. =

# FCD ENGLISH CADD STANDARD



CELL NAME= WELL

DESCRIPTION= WELL SITE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =9

FONT =

COLOR =10

TEXT HEIGHT =

STYLE =0

LINE SPACE =

WEIGHT =1

TEXT JUST. =

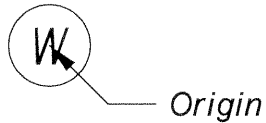
# FCD ENGLISH CADD STANDARD



CELL NAME= WMH

DESCRIPTION= WATER MANHOLE

## GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =34
COLOR =10	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CC

# FCD ENGLISH CADD STANDARD



CELL NAME= WMTR

DESCRIPTION= WATER METER

## GRAPHIC DEFINITION



Origin

SHOWN 2.5X ACTUAL SIZE

## PARAMETERS

LEVEL =11	FONT =34
COLOR =10	TEXT HEIGHT =8
STYLE =0	LINE SPACE =4
WEIGHT =1	TEXT JUST. =CC



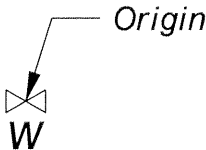
FCD ENGLISH CADD STANDARD



CELL NAME= WVLV

DESCRIPTION= WATER VALVE

GRAPHIC DEFINITION



SHOWN 2.5X ACTUAL SIZE

PARAMETERS

LEVEL	=11	FONT	=34
COLOR	=10	TEXT HEIGHT	=8
STYLE	=0	LINE SPACE	=4
WEIGHT	=1	TEXT JUST.	=LB